

THE CAR and LOCOMOTIVE CYCLOPEDIA of American Practices

Definitions and Illustrations of Railroad Cars and Locomotives and their Components built for Domestic and Export Service, and including Shop Practices and a Directory of Car and Locomotive Repair Facilities.

Fourth Edition

Combining the twenty-fifth edition of the Car Builder's Cyclopedia, first published in 1879 as the "Car Builder's Dictionary," and the nineteenth edition of the Locomotive Cyclopedia, first published in 1906 as the "Locomotive Dictionary."

Compiled and Edited for the
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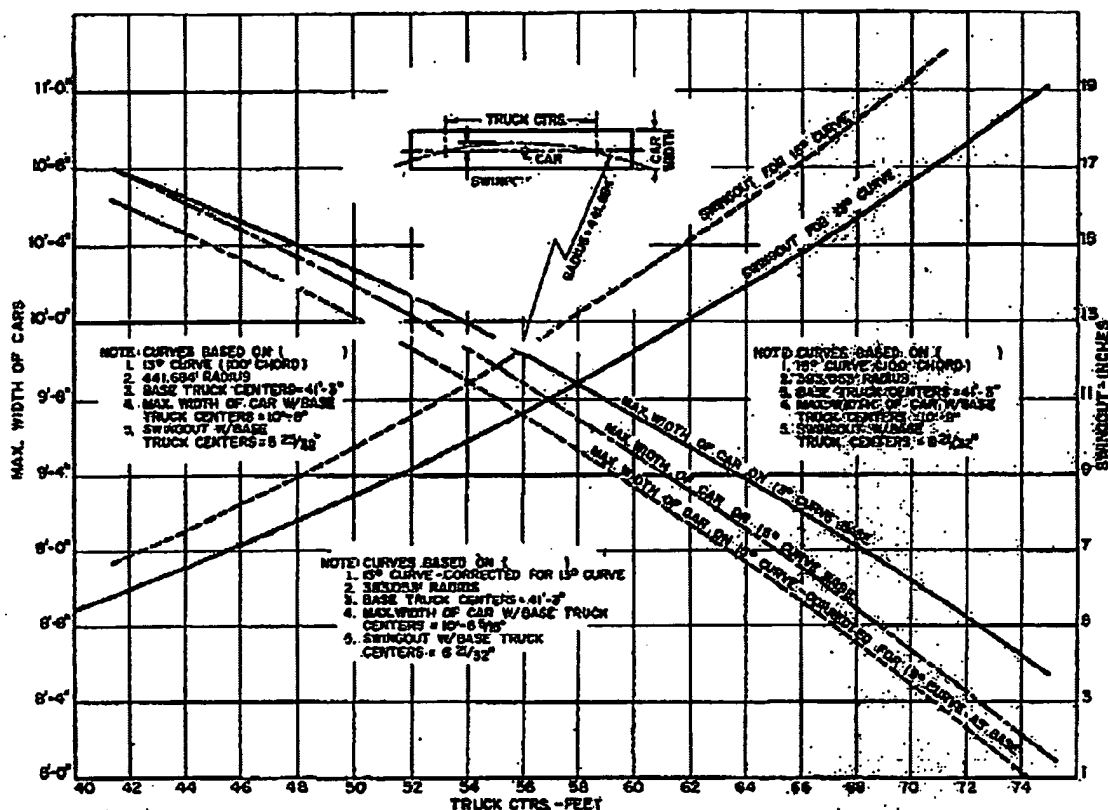
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The above diagram supplements Charts B-1 and C-1 covering changes to be made in the width of freight cars shown on the two following pages. It shows additional information, including lines for cars on 13 degree and 15 degree curves. It also shows the swingout in inches that is not included in Plates B-1 and C-1.

the increased swingout at center and/or ends of car on a 13° curve so that the width of car shall not project beyond the center of track more than the base car. Reduction in width of car for various truck centers is shown on Plates B-1 and C-1 of the Appendix. Reduction in width of car applies to entire clearance outline of Plates B, C, E, and F.

2.1.2.2. Weight and Axle Spacing Criteria

Type Truck	MAXIMUM TRACK LOAD (LBS.)		MINIMUM DIMENSIONS	
	Per Car	Per Axle	Wheel Diameter	
4-whl.	263,000	65,750	36"	
6-whl.	315,000	52,500	30"	
6-whl.	360,000	60,000	33"	
6-whl.	394,500	65,750	36"	

Cars shall not be constructed to dimensions and weights which will produce Coopers ratings in excess of E-66 for 8 ft. spans, E-64 for 10 ft. or E-60 for 12 ft. to 400 ft. spans as determined by the AAR Technical Center Fortran Program entitled "Moment and Shear Tables for Heavy Duty Cars on Bridges" which includes a total of 31 span lengths between 8 ft. and 400 ft. in length. Bend-

ing and end shear shall be considered for all spans in the program, and floor beam reactions shall be considered for all spans in the program up to 50 ft. in length.

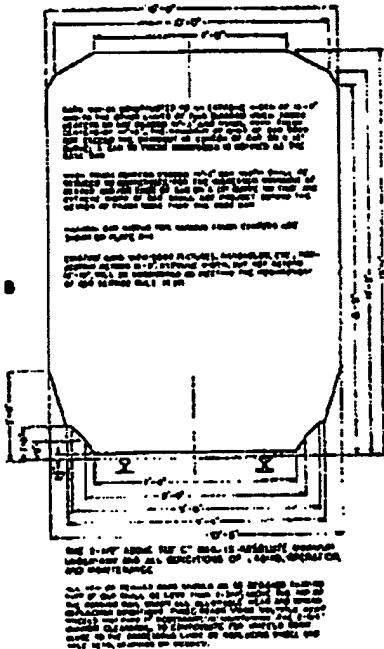
2.1.3. Vertical Center of Gravity

Height of center of gravity of fully loaded car (including weight of trucks) shall not exceed 98 inches above top of rail.

NOTE: For calculating the center of gravity of loaded car:

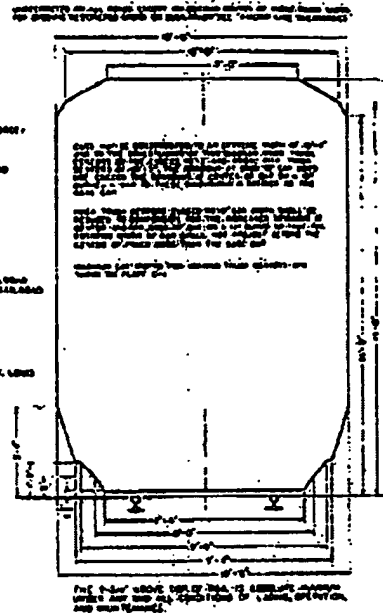
1. Box cars to be loaded to eaves and to load limit capacity.
2. Covered hopper cars to be loaded to the eaves and to load limit capacity. Cars without clearly definable eaves are to be loaded to 97 percent of total shell volume and to load limit capacity.
3. Open top hopper cars and gondola cars to be loaded with 10" average heap and to load limit capacity. (The heap shall be calculated as a uniform rectangular load 10" above sides of car.)
4. Center of gravity of flat cars to be determined for empty cars only.
5. The cubic capacity of covered hopper cars shall be calculated as that volume below the lowest portion at the hatch frame.

PLATE B



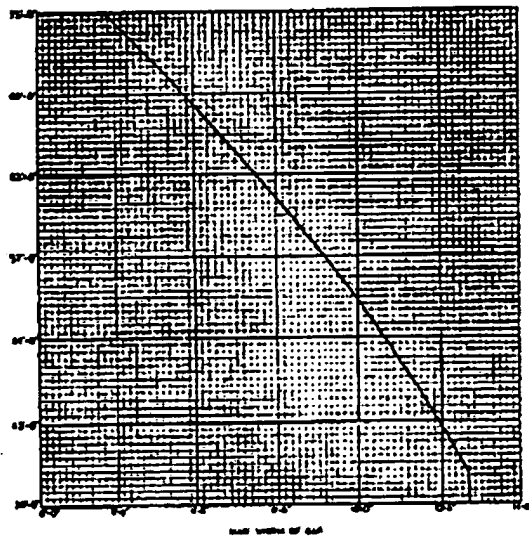
THIS DRAWING IS A SECTION OF THE CAR BODY, SHOWING THE INTERNAL COMPONENTS AND DIMENSIONS. THE CAR BODY IS SHOWN IN A SECTIONAL VIEW, WITH THE TOP AND BOTTOM PARTS SEPARATED. THE INTERNAL COMPONENTS, INCLUDING THE ENGINE, TRANSMISSION, AND DRIVETRAIN, ARE SHOWN IN DETAIL. THE DIMENSIONS OF THE CAR BODY ARE GIVEN IN INCHES AND FEET. THE CAR BODY IS SHOWN IN A SECTIONAL VIEW, WITH THE TOP AND BOTTOM PARTS SEPARATED. THE INTERNAL COMPONENTS, INCLUDING THE ENGINE, TRANSMISSION, AND DRIVETRAIN, ARE SHOWN IN DETAIL. THE DIMENSIONS OF THE CAR BODY ARE GIVEN IN INCHES AND FEET.

PLATE C



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PLATE B-1



THIS GRAPH IS USED TO DETERMINE THE CAR WIDTH AND CAR LENGTH FOR A GIVEN CAR. THE X-AXIS IS Labeled 'CAR WIDTH' AND THE Y-AXIS IS Labeled 'CAR LENGTH'. A DIAGONAL LINE REPRESENTS THE RELATIONSHIP BETWEEN THE TWO VARIABLES. THE GRAPH IS USED TO DETERMINE THE CAR WIDTH AND CAR LENGTH FOR A GIVEN CAR.

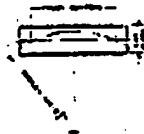
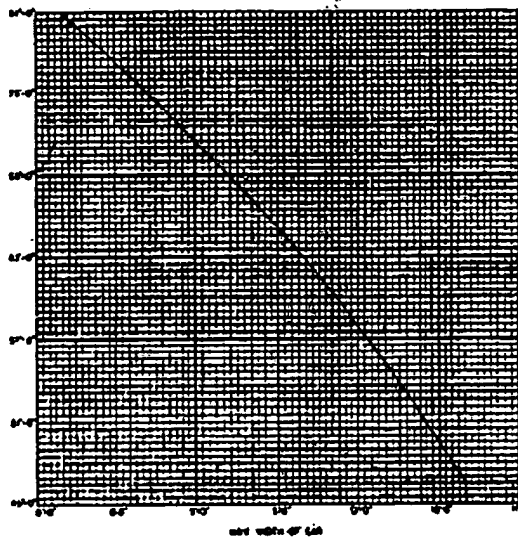


PLATE C-1



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Note: Maximum car width at locations other than center of car are shown on Plate D.

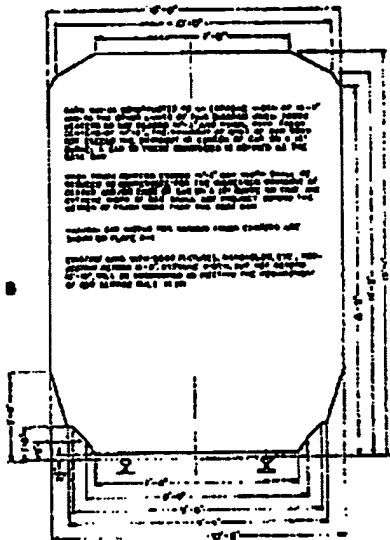
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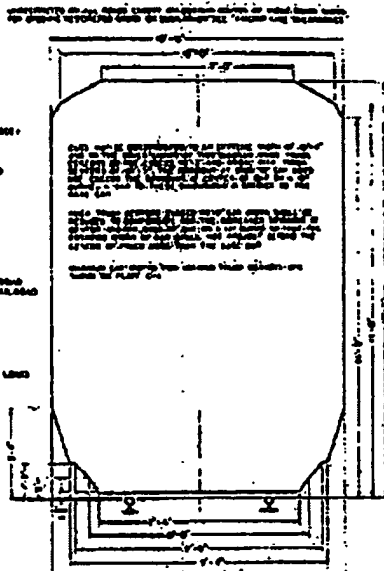
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PLATE B



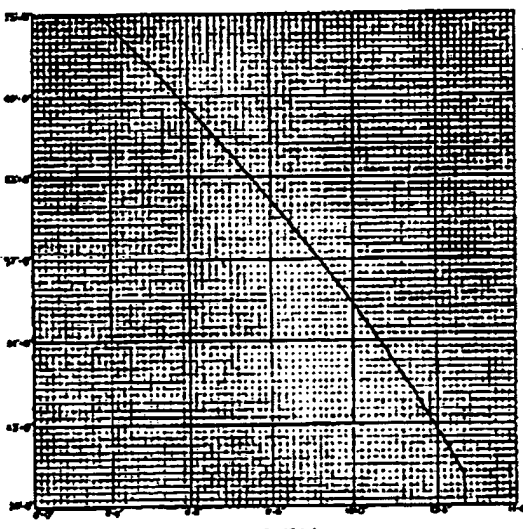
THE 2-1/2" ALUM. TUB C-10 IS MOUNTED ON A 2-1/2" ALUM. TUB C-10. THE 2-1/2" ALUM. TUB C-10 IS MOUNTED ON A 2-1/2" ALUM. TUB C-10. THE 2-1/2" ALUM. TUB C-10 IS MOUNTED ON A 2-1/2" ALUM. TUB C-10.

PLATE C



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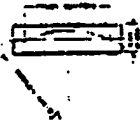
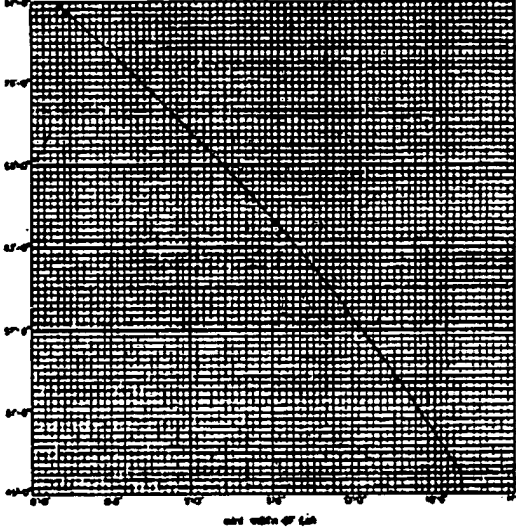


PLATE C-1



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Note: Maximum car width at locations other than center of car are shown on Plate D.

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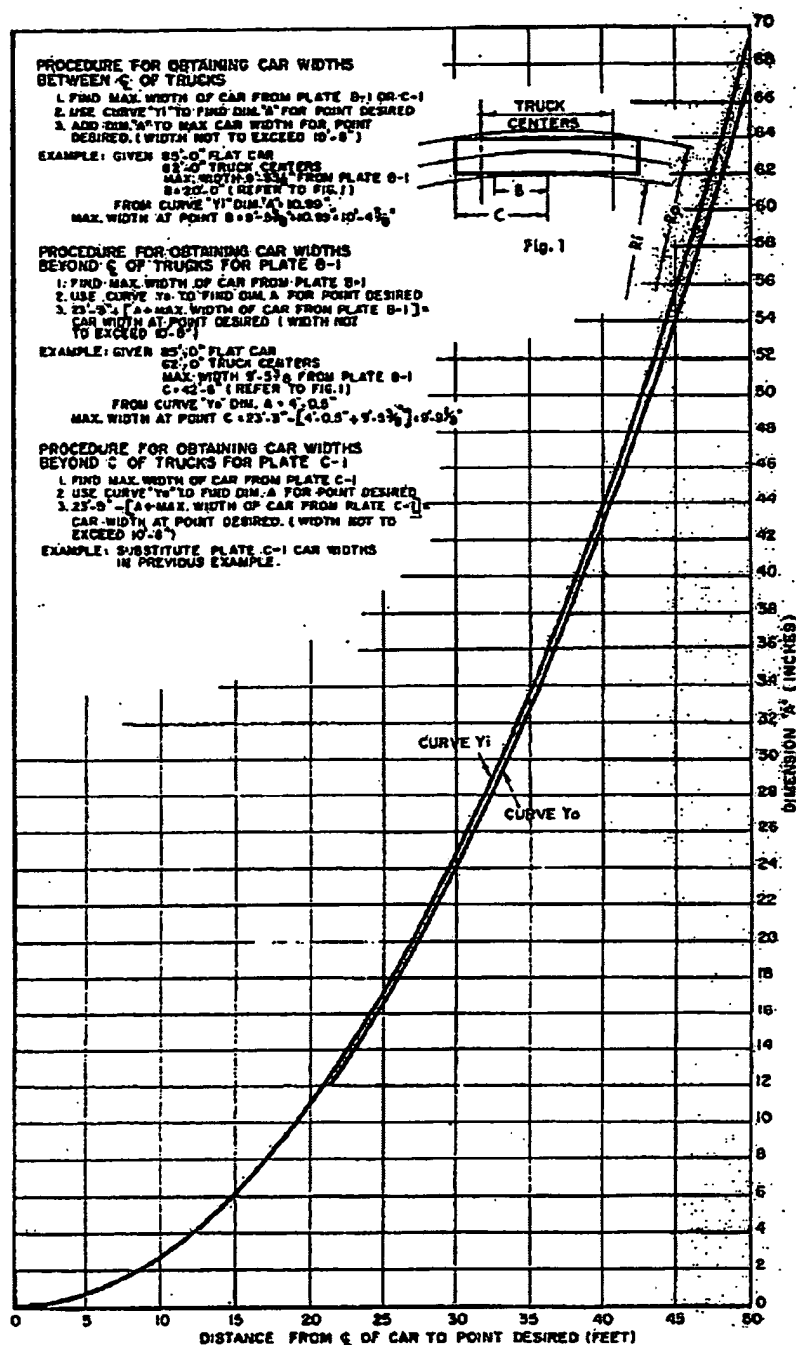
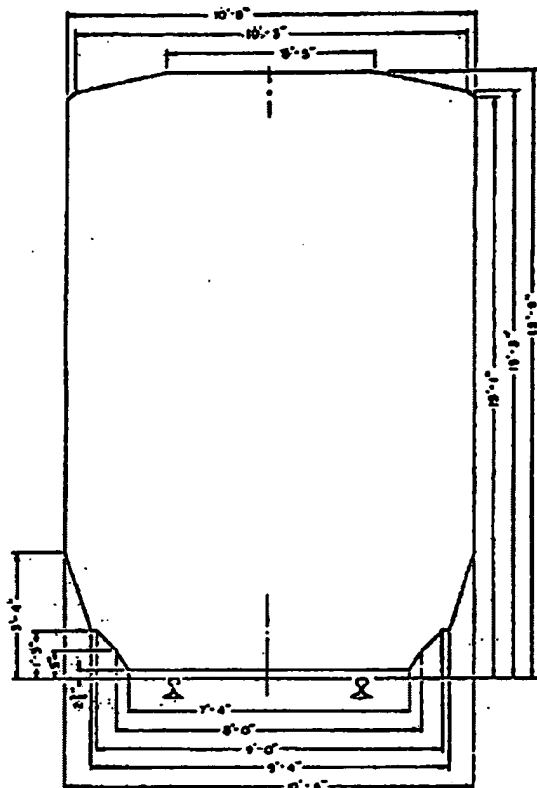


Plate D

Method for obtaining maximum allowable width of car, other than at centerline of car, for unrestricted (Plate B-1) and limited (Plate C-1) interchange service.

PLATE E

The 2 1/2 in. above top of rail is absolute minimum under any and all conditions of loading, operations and maintenance.



Unrestricted on all roads except on certain routes of those roads shown below for specific restricted areas on such roads. See RAILWAY LINE CLEARANCES.

LIGHT CAR CONDITIONS

Cars may be constructed to an extreme width of 10 ft. 8 in. and to the other limits of this diagram when truck centers do not exceed 46 ft. 3 in. and when, with truck centers of 46 ft. 3 in., the swingout at ends of car does not exceed the swingout at center of car on a 15 degree curve, a car to these dimensions is defined as the base car.

When truck centers exceed 46 ft. 3 in., car width for entire clearance outline shall be reduced to compensate for the increased swingout at center and/or ends of car shall not project beyond the center of track more than the base car.

Maximum car widths for various truck centers, at center of car, are shown on Plate C-1. Maximum car width at locations other than center of car are shown on Plate D.

Cars with rail loads in excess of 63,760 lbs. per axle cannot be operated in unrestricted interchange. However, they may be permitted under controlled conditions where special agreement has been reached between participating railroads to so handle.

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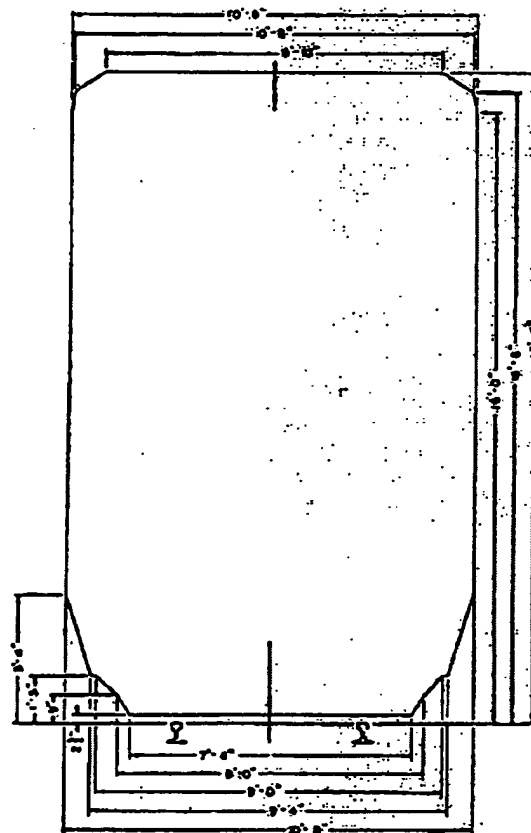
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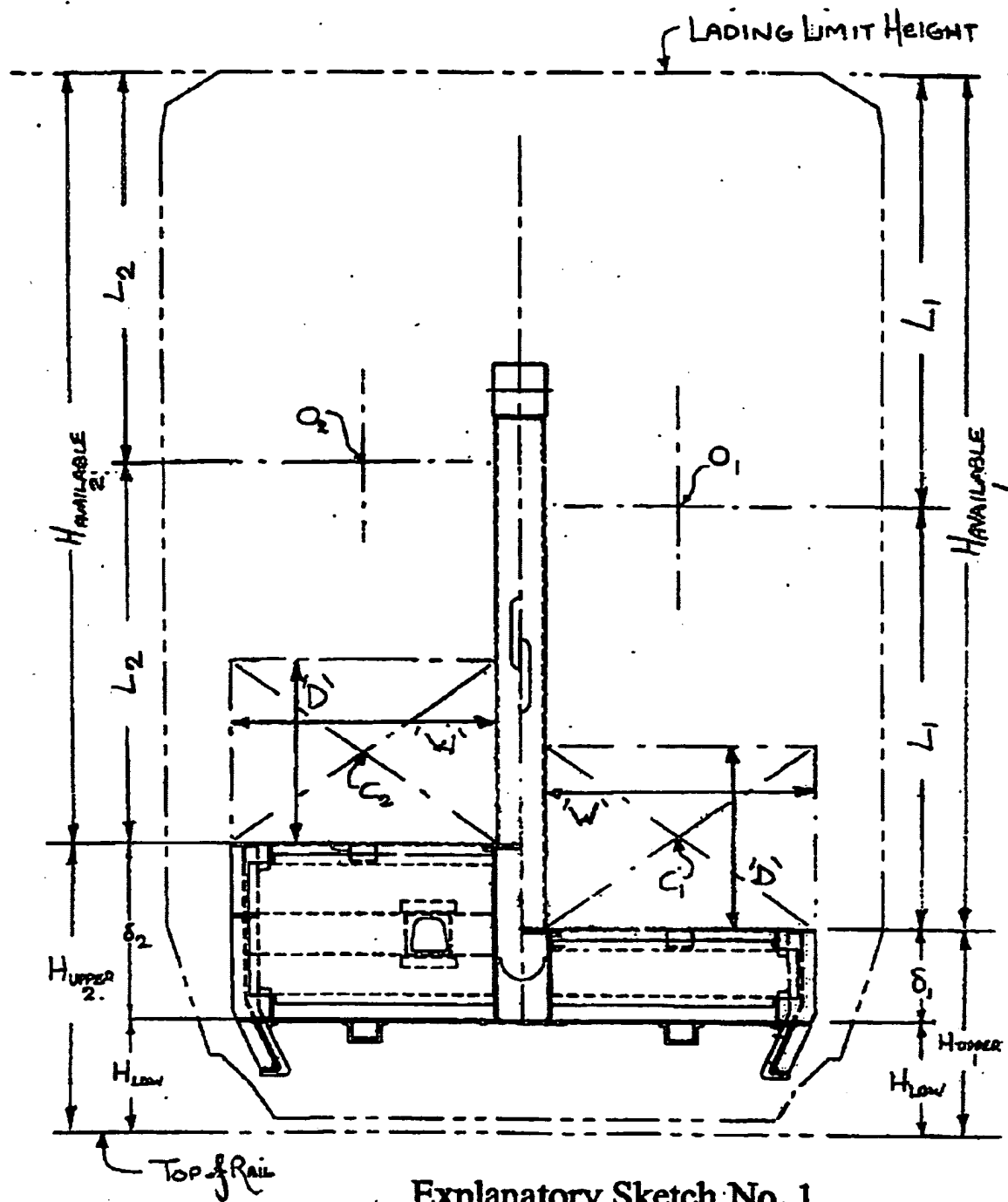
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PLATE F

The 2 1/2 in. above top of rail is absolute minimum under any and all conditions of loading, operations and maintenance.



Unrestricted on all roads except on certain routes of those roads shown below for specific restricted areas on such roads. See RAILWAY LINE CLEARANCES.



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